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LEVELS AND TEMPORAL TRENDS OF PHTHALATE METABOLITES IN HUMAN SPANISH URINE SAMPLES FROM 2012 TO 2015

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Phthalates (diesters of 1,2-benzenedicarboxylic acid), also known as phthalic acid esters (PAEs), are synthetic organic compounds that are used in a broad spectrum of industrial and commercial applications, like toys, food packaging, lubricants, vinyl flooring, adhesives, detergents, hair spray, shampoo, etc. [1] . They have endocrine disrupting potency and have become nearly ubiquitous. For the general population, the human exposure to phthalates is through ingestion, inhalation, dermal absorption, and/or contact with medical devices [2]. Once they are ingested, PAEs are rapidly metabolized to their respective monoesters in human body and some of these primary metabolites can be further metabolized to secondary metabolites and excreted by urine. All of these metabolites can be used as biomarkers of human exposure to phthalates [3].
The sample preparation and instrumental determination methods have been previously described elsewhere [4]. Briefly, the sample preparation consisted of an enzymatic deconjugation of the glucuronide phthalates followed by a purification step with OASIS© HLB SPE cartridge (Waters, MA, USA). The instrumental determination was carried out by using UPLC QqQ MS^2 (Xevo-TQS, Waters) working in MRM mode, with a BEH-phenyl column (50 mm x 2.1 mm, 1.7 µm),.
We present here, for the first time, the levels and temporal trends of 9 PAE metabolites (6 phthalate monoesters (monomethyl phthalate [MMP], monoethyl phthalate [MEP], mono-*iso*-buthyl phthalate [MiBP], mono-*n*-butyl phthalate [MBP], monobenzyl phthalate [MBzP] and monoethylhexyl phthalate [MEHP]) and 3 secondary metabolites of DEHP (5-OH-mono(2-ethylhexyl) phthalate [5-OH-MEHP], 5-oxo-mono(2-ethylhexyl) phthalate [5oxo-MEHP] and 5-carboxy-mono(2-ethylpentyl) phthalate [5cx-MEPP]) in human urine samples collected in 2012 and 2015 from 9 volunteers living in the Community of Madrid. Detectable amounts of the 9 MPAEs were obtained in all the studied samples, being the MPAE levels found in almost all collected in 2012 slightly lower than those found three years later (2015).

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